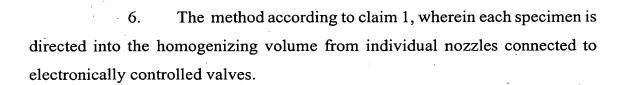


- 1. A method for analyzing a plurality of fluid specimens with a single analyzing instrument comprising the steps for:
 - a) preparing a plurality of N fluid specimens;
- b) introducing a first combination of r specimens wherein r is less than N into a homogenizing volume to create a homogenized specimen;
 - c) introducing at least a portion of the homogenized specimen to the analyzing instrument and recording the results of the analysis maintaining an association with the combination of r specimens;
- d) introducing additional different combinations of specimens 10 into said homogenizing volume and repeating steps b) and c); and
 - e) with a programmed digital computer mathematically processing the recorded results to produce analyses corresponding to individual fluid specimens.
 - 2. The method according to claim 1, wherein the fluid specimens are gaseous specimens diluted with a carrier gas.
 - 3. The method according to claim 2, wherein the analyzing instrument is a mass spectrometer.
 - 4. The method according to claim 3, wherein the mathematical processing comprises deconvolution.
 - 5. The method according to claim 4, wherein the mathematical processing comprises a Hadamard transform.



- 7. The method according to claim 6, wherein the nozzle sizes, pressure drops therethrough, and open times of said valves is controlled to introduce a specified mass of each fluid specimen into the homogenizing volume.
- 8. The method according to claim 7, wherein when the nozzles are not supplying specimen to the homogenizing volume the flow of the specimen is diverted and continued.
- 9. The method according to claim 1, wherein N is an odd number greater than 2 and r is an even number equal to (N+1)/2.